

REMARKS

Reconsideration of the application in view of the present amendment is respectfully requested.

By the present amendment, claims 1 and 11-18 have been canceled and claims 19-24 have been added.

Based on the foregoing amendments and the following remarks, the application is deemed to be in condition for allowance, and Action to that end is respectfully requested.

The Examiner rejected claims 1 and 11-18 under 35 U.S.C. § 102(b) as being anticipated by Nagaoka, et al., U.S. Patent No. 5,501,583 (Nagaoka). As noted above, claims 1 and 11-18 have been canceled. It is respectfully submitted that the new claims 19-24 are patentable over Nagaoka.

Specifically, claim 19 recites that:

- (i) the rotor shaft is supported, at its high-vacuum side end, with a permanent magnet bearing, and
- (ii) at its fore-vacuum side end, with a bearing arrangement that contains at least one gas bearing.

As discussed in the specification, in the dry gas friction vacuum pumps that operate in so-called clean environment, the bearing support should insure favorable rotary dynamic characteristics and prevent any contamination of the gas in the high-vacuum region. Favorable rotary dynamic characteristics can be obtained when the rotor shaft is supported at both ends, the end located in the high-vacuum region and the end located in the fore-vacuum region. As further discussed in the specification, the problem was to provide an adequate support of the end of the rotor shaft located in the high-vacuum region of the pump. None of the numerous solutions, which are discussed in the specification in the preamble, proved to be reasonably satisfactory.

Applicants have found out that supporting the high-vacuum side end of the rotor shaft with a permanent magnet bearing and the fore-vacuum side end with a bearing arrangement including at least one gas bearing permit to achieve both favorable dynamic characteristics and non-contamination of the high-vacuum-region.

It is respectfully submitted that Nagaoka neither anticipates nor makes obvious the present invention. Nagaoka discloses a vacuum pump in which both ends of the rotor shaft (4A, 4B) are located in the fore-vacuum region. The region of the end (4A) is adjacent to the gas outlet (3), and the region of the end (4B) is adjacent to the second gas outlet (26) (column 3, lines 64-65). Nagaoka discloses a

completely different and a more complicated pump structure. Nagaoka discloses a pump designed, among others, for handling corrosive gases and in order to prevent damage to the bearings, purge gas is supplied in the bearing chambers. Further Nagaoka discloses using different types of bearings in the fore-vacuum region. Among others, Nagaoka suggests using gas bearings at both ends of the rotor shaft (column 5, lines 23-25).

However, arrangement of the gas bearings in the high-vacuum region encounters a number of problems. Firstly, gas for the gas bearing has to be provided. This gas has to be conducted from the outside into the high-vacuum area of the pump-inlet. Also, the gas has to be led away from the gas bearing. If the gas, which comes out of the bearing, flows into the pump-inlet area, the high-vacuum is spoiled. So, the gas bearing has to be sealed in a high-vacuum tight manner and its gas has to be transported from outside of the pump to the gas bearing and back to the outside (also in a high-vacuum tight manner). Otherwise it will not be possible to obtain a high-vacuum. This will have the structure very complicated and technologically difficult to produce.

A rejection based on U.S.C. § 102 as in the present case, requires that the cited reference disclose each and every element covered by the Claim. Electro Medical Systems S.A. v. Cooper Life Sciences, 32 U.S.P.Q. 2d 1017, 1019 (Fed. Cir. 1994); Lewmar Marine Inc. v. Barient Inc., 3 U.S.P.Q. 2d 1766, 1767-68 (Fed.

Cir. 1987); Verdegaal Bros., Inc. v. Union Oil Co., 2 U.S.P.Q. 2d 1051, 1053 (Fed. Cir. 1987). The Federal Circuit has mandated that 35 U.S.C. § 102 requires no less than “complete anticipation . . . [a]nticipation requires the presence in a single prior art disclosure of all elements of a claimed invention arranged as in the claim.” Connell v. Sears, Roebuck & Co., 220 U.S.P.Q. 193, 198 (Fed. Cir. 1983); See also, Electro Medical Systems, 32 U.S.P.Q. 2d at 1019; Verdegaal Bros., 2 U.S.P.Q. 2d at 1053.

Nagaoka does not disclose arrangement of one end of the rotor shaft in the high vacuum region. Nor does Nagaoka disclose the specific combination of bearings, as claimed. Since Nagaoka fails to disclose each and every feature of independent Claim 19, Nagaoka, as a matter of law, does not anticipate the present invention, as defined by said independent claim.

In view of the above, it is respectfully submitted that Nagaoka does not anticipate or make obvious the present invention as defined in Claim 19, and the present invention is patentable over Nagaoka.

Claims 20-24 depend on claim 19 and are allowable for the same reasons claim 19 is allowable and further because of the specific features recited therein which, when taken alone and/or in combination with those of claim 19, are not disclosed or suggested in the prior art.

CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance, and allowance of the application is respectfully requested.

Should the Examiner require or consider it advisable that the specification, claims and/or drawings be further amended or corrected in formal respects in order to place the case in condition for final allowance, it is respectfully requested that such amendment or correction be carried out by Examiner's Amendment and the case passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing this case to allowance, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

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Dated: January 30, 200

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